

AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1-16. (Canceled)

17. (New) A rechargeable battery, comprising:

an electrode plate group including a positive electrode plate in which a positive electrode material is attached to a positive current collector, a negative electrode plate in which a negative electrode material is attached to a negative current collector, the positive and negative electrode plates being superimposed with an intervening separator being disposed therebetween, the positive electrode plate, the negative electrode plate and the separator together being of curved shape following a spiral, projected portions of the positive and negative current collectors respectively extending outwardly of opposite ends of the electrode plate group, said projected portions being configured to respectfully define flat planes on the opposite ends of the electrode plate group, the flat planes being formed by deforming the projected portions which are initially coplanar with remaining portions of the current collectors by application of pressure by a pressing member in a molding jig of a generally cylindrical interior configuration in a direction of a spiral axis of the electrode plate group, the projected portions having contiguous structure along an

extent of the spiral such that when pressure is applied by the pressing member, an entirety of each of the projected portions is bent progressively radially inward to form a contiguous flattened spiral region on each of the opposite ends of the electrode plate group which approximates a flat plane extending orthogonally to the spiral axis;

a positive current collecting plate and a negative collecting plate each joined to the flattened spiral region at a one of the opposite ends corresponding to the projected portion of a respective one of the positive and negative electrode plates;

an electrolyte; and

a battery container in which the electrode plate group with the positive and negative current collecting plates attached thereto and the electrolyte are accommodated.

18. (New) The rechargeable battery according to claim 17, wherein the current collecting plates are joined to the electrode plate group by being respectively pressed into contact with the flattened spiral regions planes, and being then laser-welded in a radial direction at a plurality of locations in the circumferential direction of the current collecting plates.

19. (New) A method of manufacturing a rechargeable battery, comprising the steps of:

interposing a separator between a positive electrode plate and a negative electrode plate to form a multilayer electrode structure, said positive electrode plate and said negative electrode plate including uncoated end portions;

winding said multilayer electrode structure in spiral fashion to form an electrode plate group having a spiral configuration, said positive electrode plate, said negative electrode plate and said separator being positioned relative one another prior to the winding of said multilayer structure such that after being wound the uncoated end portions of said positive electrode plate and said negative electrode plate extend respectively from opposite ends of the electrode plate group thereby defining uncoated projected portions;

inserting said electrode plate group into a jig cavity in a molding jig having a generally cylindrical interior configuration, the electrode plate group being positioned with a winding axis thereof generally codirectional with a central axis of the jig cavity, said jig cavity having an opening at one end thereof; and

subjecting said electrode plate group to pressure by a pressing member inserted via said opening and moved in a direction of said winding axis to bend the uncoated projected portions of said positive electrode plate and said negative electrode plate in a radially inward direction of the spiral configuration of the electrode plate group to form flattened regions on the opposite ends of the electrode plate group which approximate respective flat planes extending orthogonally to the winding axis of said electrode plate group.

20. (New) The method of manufacturing a rechargeable battery according to claim 19, further comprising the steps of:

removing said electrode plate group from the molding jig;

pressing a positive electrode current collecting plate and a negative electrode current collecting plate into contact with the flattened regions on respective ones of the opposite ends of the electrode plate group corresponding to the positions of the uncoated projected portions of the positive electrode plate and the negative electrode plate; and

welding the current collecting plates to the electrode plate group at a plurality of locations within the flattened regions.

21. (New) The method of manufacturing a rechargeable battery according to claim 20, wherein said step of welding includes laser-welding the current collecting plates in a circumferential direction of surfaces of the current collecting plates in radial fashion from a middle towards an outer periphery of the electrode plate group to form an electrode plate group assembly.

22. (New) The method of manufacturing a rechargeable battery according to claim 20 or 21, further comprising the steps of:

accommodating said electrode plate group assembly in a battery case; and

vacuum-impregnating the electrode plate group assembly within the battery case with an electrolyte.

23. (New) The method of manufacturing a rechargeable battery according to claim 22, further comprising the steps of:

connecting the current collecting plates each to a respective one of a battery closure and the battery case; and

sealing the battery case with the battery closure.

24. (New) A method of manufacturing a rechargeable battery, comprising the steps of:

interposing a separator between a positive electrode plate and a negative electrode plate to form a multilayer electrode structure, said positive electrode plate and said negative electrode plate including uncoated end portions;

winding said multilayer electrode structure in spiral fashion to form an electrode plate group having a spiral configuration, said positive electrode plate, said negative electrode plate and said separator being positioned relative one another prior to the winding of said multilayer structure such that after being wound the uncoated end portions of said positive electrode plate and said negative electrode plate extend respectively from opposite ends of the electrode plate group thereby defining uncoated projected portions;

contacting a one of the opposite ends of the electrode plate group with at least one current collecting plate having a plurality of ribs which extend radially and project towards the uncoated projected portions; and

pressing the at least one current collecting plate toward the electrode plate group such that the ribs bite into the uncoated projected portions in contact area portions correspondingly located.

25. (New) The method of manufacturing a rechargeable battery according to claim 24, further comprising the step of welding the at least one current collecting plate to the electrode plate group at a plurality of locations within the contact area portions to form a electrode plate group assembly.

26. (New) The method of manufacturing a rechargeable battery according to claim 25, wherein the at least one current collecting plate includes a positive current collecting plate and a negative current collecting plate, said step of welding including welding the positive and negative current collecting plates on respective ones of the opposite ends of the electrode plate group corresponding to the positions of the uncoated projected portions of the positive electrode plate and the negative electrode plate to form the electrode plate group assembly.

27. (New) The method of manufacturing a rechargeable battery according to claim 26, further comprising the steps of:

accommodating said electrode plate group assembly in a battery case; and
vacuum-impregnating the electrode plate group assembly within the battery case with an electrolyte.

28. (New) The method of manufacturing a rechargeable battery according to claim 27, further comprising the steps of:

connecting the current collecting plates each to a respective one of a battery closure and the battery case; and
sealing the battery case with the battery closure.

29. (New) The method of manufacturing a rechargeable battery according to claim 24, wherein each of the plurality of ribs includes a flat region at an apex thereof which, when the ribs are pressed into the the uncoated projected portions in the contact area portions, the uncoated projected portions are deformed into flattened areas in the contact area portions, surfaces of which extend generally orthogonal to the winding axis.

30. (New) The method of manufacturing a rechargeable battery according to claim 29, further comprising the step of welding the at least one current

collecting plate to the electrode plate group at a plurality of locations within the flattened areas to form an electrode plate group assembly.

31. (New) The method of manufacturing a rechargeable battery according to claim 30, wherein the at least one current collecting plate includes a positive current collecting plate and a negative current collecting plate, said step of welding including welding the positive and negative current collecting plates on respective ones of the opposite ends of the electrode plate group corresponding to the positions of the uncoated projected portions of the positive electrode plate and the negative electrode plate to form the electrode plate group assembly.

32. (New) The method of manufacturing a rechargeable battery according to claim 31, further comprising the steps of:

accommodating said electrode plate group assembly in a battery case; and
vacuum-impregnating the electrode plate group assembly within the battery case with an electrolyte.

33. (New) The method of manufacturing a rechargeable battery according to claim 32, further comprising the steps of:

connecting the current collecting plates each to a respective one of a battery closure and the battery case; and

sealing the battery case with the battery closure.